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# Sir Henry Head, M.D.

1861-1940

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## Obituary

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The passing of Henry Head, after a long illness which severely incapacitated him for many years, marks the close of the era of British neurology associated with the great names of Hughlings Jackson, David Ferrier, William Gowers, Victor Horsley and Kennier Wilson. Head, in a period of fifty years, saw the beginnings and flowering of the British school and left no uncertain mark himself on a brilliant period of advancement. His place is secure among a small group in England who did most to develop the subject.

Born Aug. 5, 1861, Head was educated at the Charterhouse School in London, the University of Halle, Trinity College, Cambridge, and the University of Prague. He became a fluent speaker of German and French, so much at ease in these languages that at the customs barriers officials at first were often in doubt as to his nationality. Returning to his native land, he practiced neurology in London from the nineties until about 1928, one of the outstanding physicians of his time. His scholarly attainment gained early recognition; he was made a fellow of the Royal Society, one of the youngest men to join that distinguished body, and was raised to knighthood in 1927. He gave the Goulstonian lecture in 1901 and the Croonian lecture in 1911 and for seventeen years was the able editor of *Brain*.

In addition to his large practice, Head spent a considerable time each day in human physiologic investigation. His first work, an extensive, critical study, was on the pain zones of the skin in visceral disease. Published in 1894, two years after his graduation from Cambridge with the degree of Doctor of Medicine, this work brought immediate and deserved recognition. "Head zones" was added to the language of clinical neurology, and his name became known throughout the medical world. With this paper as a basis, a plan of study was soon evolved; from visceral nerves he proceeded to peripheral nerves and then to the functions of the spinal cord, including the control of the vesical and rectal sphincters, the medulla and midbrain, the basal ganglia, the speech areas and, finally, the motor and sensory fields of the cerebral cortex.

At each level, Head, by his painstaking observations, threw additional light on the functions of the nervous system. In a series of papers, mostly published in *Brain*, with details of each procedure carefully recorded, Head accomplished more work in an orderly manner than almost any neurologist who has ever lived. As an example of planned investigation in neurophysiology his work has never been surpassed. In quality, moreover, it ranks with the classic contributions to the subject. His method was one of slow, methodic investigation, his results being checked and rechecked and his observations clearly set forth for all to read. As an example of his care in publishing his results, he once said to me: "I have never published a paper without first rewriting it many times, putting the manuscript in order and then, when it was ready to send to the journal, laying it aside for a year. If at the end of a year I felt that my observations were correct and my conclusions sound, I sent it in." Such caution is, indeed, rare in medicine; to Head any other method was unthinkable.

When adverse criticism was directed against his observations, moreover, he was not unwilling to take up the matter directly with the person who offered the criticism. After the famous experiment on his own arm in 1903, when the radial nerve was severed, and two reports on the subsequent observations had been published, Max von Frey made some general criticisms of Head's views. Head went to Würzburg in the spring of 1908 and spent a week in von Frey's physiologic laboratory, submitting himself to a long series of tests. Many of Head's statements were confirmed. Professor von Frey's and other criticisms were examined and commented on by Head in an appendix to his collected volumes of studies.

During the World War, Head gave up his private practice and confined himself to his physiologic studies. He served on a committee on injuries of the nervous system under the Medical Research Council. One of the publications of this committee, issued in 1924, was a report on "Injuries of the Spinal Cord and Cauda Equina." This report, one of the best ever published on injuries in this region, has frequently been used as a basis for further studies. Another paper, entitled "The Automatic Bladder, Excessive Sweating and Some Other Reflex Conditions in Gross Injuries of the Spinal Cord," resulted from the evaluation of injuries of the spinal cord by Head and George Riddoch. Many of these studies were made at the Empire Hospital for Injuries of the Nervous System in London, a hospital for officers. There patients were intensively observed for months; the intellectual standard of the injured served to make the subjective symptomatology of particular value.



These papers and others were finally issued in two large volumes, entitled "Studies in Neurology" (London, Oxford University Press, 1920).

In 1916, I had the opportunity of working with Head at the London Hospital two or three days a week. I would meet Sir Henry precisely at 2:15 p. m. in one of the small rooms adjacent to the Currie ward of the London Hospital in the West End. Head was always prompt, and two patients would be waiting for him. Work, at that time, was being carried forward on a study of the cerebral cortex, and the patients were soldiers who had received injuries to the head.

For instance, one patient aged 22, was injured in the postrolandic area, Nov. 1, 1916, by a fragment of a high explosive shell. He was examined by Head and me on Nov. 29, 1916. In addition to the usual neurologic examination, which was as complete as possible, an extensive study of the affected arm in relation to loss of sensation of various forms was made. Measured movement was taken on a scale with each finger tested and accurately recorded. Similar complete records of movements at the wrist and elbow were made. These movements were recorded on a scale attached to the patient's arm and were repeated many times before an average reading was put down. A second testing was made by placing weights first on the right hand and then on the left. The weights were carefully made pieces of lead of exactly the same size in relation to the part which touched the body. Differences in weight of between 60 or 70 and 100 Gm. were first used on one hand and then the other, records being made in regard to whether or not the responses were equal on the two sides. The variation was largely a matter of degree, and great care was taken to ascertain exactly the degree of sensory loss. The same procedure was carried out with von Frey hairs of various strengths. This examination was followed by consecutive compass tests, carried out on each hand at twenty different points, and by determinations of the appreciation of tuning fork vibrations and the perception of various degrees of temperature. The testing of a single person might take two hours, but Head always stopped promptly at 4:30 for tea. A day or two later we would do the same thing all over again.

This will give slight impression of the care with which Head made his monumental studies. An observer was always impressed by the thoroughness of his research, his particular detachment in the examination of a patient and his great ability to make the patient feel at ease before and after his investigations.

This is not the place to review completely Head's epoch-making studies. It should be pointed out, however, that whatever aspects of

nervous disease or injury Head considered worthy of study, he added notably to knowledge of that subject. His papers serve to reorient the entire physiologic concept of the functions of the peripheral nerves and of the sensory cortex. The studies of the latter were perhaps his crowning achievement, for no one before his time had made such extensive investigations, nor had any one evaluated the functions of the sensory cortex in so thorough a manner. He was the first to point out that the sensory cortex deals with the recognition of spatial relations, the response to stimuli of different intensity and the appreciation of similarity and difference in external objects brought into contact with the surface of the body. Head showed, moreover, that loss of this type of sensation could be produced by lesions of both the postcentral and the precentral convolution, the anterior part of the parietal lobule and the angular gyri. The form assumed by a cortical loss of sensation, according to Head, could not be expressed in anatomic or the usual physiologic terms, but was to be thought of in those of the most elementary processes of mind. The anatomic lesion upsets the orderly sequence of the physiologic process, and this defect of function is manifested in the disturbance of the psychic act of sensation. Changes in sensibility of the cortical region of the upper extremity do not follow the distribution of axial or radicular lines. Each digit is a unit. It is the functions, rather than the anatomic relations of any one part of the body, that are represented. Next in order comes the sole which constantly exercises a discriminative action in walking. Hence, a cortical lesion may disturb the sensibility of the hand and foot without of necessity affecting the elbow, shoulder or knee.

For ten years after the War Head continued to work in London. It was during this period that he carried out his studies on aphasia, using in most cases methods developed for his previous observations. These consisted of repeated examinations by serial tests. The function of speech, to Head, was one of "symbolic thinking and expression." The various forms assumed by disorders of speech were described under verbal, nominal, syntactic and semantic aphasia.

Slowly paralysis agitans overcame his activities, and he retired to his estate at Hartley Court, near Reading. There, in a delightful home, set in a park, he lived the last decade of his life, slowly victimized by one of the most trying of all diseases. In spite of his illness, he was still pondering and planning research for others, if he could not carry it out himself. He died in Reading, Oct. 9, 1940. In his will he left to the Royal Society over \$500,000 with provision that the money "shall be applied for the purpose of the advancement in England of the science



of medicine in the widest sense." He suggested that the funds be used to establish professorships or similar posts or research scholarships in some branch of medical science.

In addition to his scientific writing, Head wrote considerable verse. His earlier works were translations of Heine's poems. During the World War, however, he contributed a number of poems of worth to the *Yale Review*, at the instigation of his old friend Harvey Cushing. Of first importance was one of wide appeal, "I Cannot Stand and Wait." A patient dying of an injury to the spinal cord inspired a touching tribute, "Died of His Wounds." In "Destroyers," who keep "the peace of our ancestral home," Head wrote his finest verse. The small collection was published in 1919, as "Destroyers and Other Verses," by the Oxford Press.













